

**BULLETIN OF THE
ALLAHABAD MATHEMATICAL SOCIETY**

Vol. 17, 2002

CONTENTS

Belmannu Devadas Acharya

STABLE SET COVERS, CHROMATICITY AND KERNELS OF
A HYPERGRAPH

1-15

Abstract: In this paper, we introduce the notions of *stable set cover* of a hypergraph and use it to generalize the notions of vertex-colorings of a graph to hypergraphs. For a given hypergraph $H = (X, E)$, we then define *chromatic number* $\chi(H)$, *achromatic number* $\Psi(H)$, *strong chromatic number* $\gamma(H)$, *strong achromatic number* $\Gamma(H)$ and *pseudochromatic number* $\Psi_s(H)$ and establish that

$$\chi(H) \leq \gamma(H) \leq \Gamma(H) \leq \Psi(H) \leq \Psi_s(H) \leq |X| - \beta_0(H) + 1$$

where $\beta_0(H)$ denotes the strong stability number of H , an inequality well known for graphs. We then go on to seek relationships that these parameters bear with certain new notions such as full chromatic number, weak degree domination number and independent domination number in a more general setting when the hypergraphs are endowed with positive real vertex weight functions.

D. Bhattacharjee

A GENERALIZED B -PRODUCT AND ITS PROPERTIES

17-21

Abstract: In this paper we define a kind of convolution of arithmetical functions called by us K_B -product and denoted by $*_{K_B}$.

Let $R_{K_B} = \langle C^N, +, *_{K_B} \rangle$ be the set of all complex valued arithmetical functions with ordinary addition and with a K_B - product $*_{K_B}$ considered as multiplication. We give conditions on $*_{K_B}$ which are necessary and sufficient for R_{K_B} to be a commutative and associative ring . We investigate also some other algebraic properties R_{K_B} of such as existense of unit element zero divisors and we finally determine all invertible elements of R_{K_B} .

M. K. Bose And Indrajit Lahiri

SEQUENTIAL TOPOLOGICAL SPACES AND SEPARATION AXIOMS 23-37

S. K. Gupta

SOME PROBLEMS ON A_p -SPACES 39-43

Abstract: Let G be a locally compact abelian group with dual Γ . We define

$$A_p(G) = \{f : f \in L^1(G), \hat{f} \in L^p(\Gamma)\}, 1 \leq p < \infty,$$

with the norm $\|f\|_{A_p} = \|f\|_{L^1} + \|\hat{f}\|_{L^p}$. We present few open problems on A_p -spaces and prove some new results.

J. López-Bonilla, J. Morales And G. Ovando

MATRIX ELEMENTS $\langle m | x^k | n \rangle$ FOR THE ONE-DIMENSIONAL HARMONIC OSCILLATOR 45-51

Abstract: It is shown how the properties of the Hermite polynomials generate a simple technique to compute the matrix elements $\langle m | x^k | n \rangle$, $k = 0, 1, 2, \dots$ for the one-dimensional oscillator.

J. L. López-Bonilla, J. Morales and G. Ovando

ON THE HOMOGENEOUS LORENTZ TRANSFORMATION 53-58

Abstract: A simple method to obtain the Greenberg-Knauer results concerning homogeneous Lorentz transformations is outlined.

M. M. Manene, A. M. Rotich and R. O. Simwa

ON MULTI-TYPE STEP-WISE GROUP SCREENING DESIGNS

59-78

Abstract: In this paper, we have extended step-wise group screening designs with only type of search steps (one-type step-wise group screening designs) to multi-type step-wise group screening designs. We have considered only the case when responses are observed without errors. Expressions for the expected total number of runs for one-type, two type and in general r -type step-wise group screening designs are obtained. The designs for various types are compared with respect to the minimum expected total number of runs. Multi-type step-wise group screening designs are also compared with the multi-stage group screening designs with respect to the minimum expected total number of runs.

D. N. Paliwal and H. Kanagasabapathy

LARGE DEFLECTION ANALYSIS OF AN ORTHOTROPIC CYLINDRICAL
PANEL ON A KERR TYPE ELASTIC FOUNDATION

79-90

Abstract: Large deflection analysis of orthotropic shallow cylindrical panel resting on a Kerr type elastic foundation is carried out using an approach that involves variational principles and Galerkin's error minimizing technique. The influence of shell geometry and the three parameters of Kerr foundation model on load deflection characteristics is analyzed. It is noticed that increase in shell curvature, shear layer modulus or lower spring layer modulus results in reduced shell deflection. Further study confirms that shells with immovable edges are more sensitive to change in above referred parameters than the ones with movable edges. This is true in the case of static analysis for clamped as well as for simply

supported edges.

Sneh Sharma

ON PARAFREE GROUPS

91-99

Abstract: A group P is called parafree if it is residually nilpotent and if there exists a free group F and a homomorphism $\varphi : F \rightarrow P$ such that φ induces isomorphisms $\varphi_i : F/F_i \sim P/P_i, i \geq 2$ modulo the terms F_i, P_i of the lower central series. In this article we give a survey of the work on the parafree groups.

M. K. Uma, E. Roja and G. Balasubramanian

ON SOME STRONGER FORMS OF FUZZY PRE-CONTINUOUS
FUNCTIONS

101-111

Abstract: In this paper several stronger forms of fuzzy pre-continuous functions are introduced and studied. The inter-relations between these functions and other existing functions are also discussed in detail.
